ORIGINAL RESEARCH PAPER

Pediatric Dentistry

TO EVALUATE AND COMPARE THE EFFICACY OF ACUPRESSURE, AUDIO-VISUAL AIDS AND CONVENTIONAL TELL SHOW DO TECHNIQUES IN REDUCING ANXIETY IN CHILDREN-A RANDOMIZED CROSS-SECTIONAL CLINICAL TRIAL

KEY WORDS: Dental Anxiety, Acupressure

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ABSTRACT

Purpose - Management of anxious children is one of the most daunting and frequently faced challenges by paediatric dentists. The purpose of this study is to establish a significant anxiolytic technique to be utilized in day-to-day clinical practise. **Aim** - To evaluate and compare the efficacy of acupressure therapy, audiovisual aids and conventional tell show do technique in reducing the anxiety in children during the administration of local anaesthesia. **Methodology –** 86 apparently healthy children between the age group of 7 to 11 years visiting the Department of Paediatric and Preventive Dentistry, Darshan Dental College and Hospital, Udaipur were selected based on the inclusion and exclusion criteria. They were divided into four groups with 26 children in each group. The following techniques were used for the reduction of anxiety during the administration of local anaesthesia –
Group 1-Conventional Tell Show Do Technique,
Group 2-Acupressure therapy that is bilateral pressure on He Gu (L14) point which is the highest point located on the dorsal surface above the abductor pollicis muscle during abduction of thumb and index finger,
Group 3-Audio Visual Aids,
Group 4- (Control group) No techniques will be used for the reduction in anxiety.
The level of anxiety was assessed at three different time intervals that is before, during and after the treatment procedure by a Pulse Oximeter and Raghvendra M Shetty pictorial scale (RMS-PS 2015).
Data was subjected to statistical analysis in SPSS version 21 software.
Results- Acupressure was established as the most effective method in reducing anxiety, followed by AV aids and acupressure in children. **Conclusion -** Acupressure may act as a convenient choice for children undertaking dental treatment to alleviate dental anxiety.

INTRODUCTION

The greatest challenge faced in Pediatric Dentistry is helping children overcome their anxiety about dental clinic visits. Disruptive behavior, which may stem from anxiety, temperament, or mere noncompliance, is especially troubling due to its potential to restrict children's access to quality oral health care and elevate the risk of injury. Additionally, it raises the number of personnel needed to finalize procedures and impacts the experiences of other patients. Psychological and behavioral findings indicate that the three dental procedures that induce the most anxiety in children are local anesthetic (LA) injection, rubber dam placement, and initiation of tooth preparation with a high-speed handpiece(1).

Management of dental anxiety in child includes various techniques that are usually employed are either pharmacological or Nonpharmacological or a combination of these two techniques. Non pharmacological interventions are gaining popularity due to their non-invasive approach.

Acupressure is defined as, "a pressure point, hand-mediated energy healing technique which is considered as useful strategy for the management of multiple symptoms, along with beneficial physical comforts, satisfaction and economical, and is a safe intervention that requires no sophisticated equipment, carries minimal cost, and can be used by physicians, nurses, and even patients.(2)

Various studies have reported that children can benefit from the anti-anxiety and pain-relieving effects of acupressure. Anxiety can increase pain perception, so the anti-anxiety effect alone can explain the analgesic effect of this procedure. However, the use of acupressure in pediatric dentistry is still an unexplored entity.

Different points can be used to create the effect of acupressure on pain. One of the most famous of these points is the Hegu. The Hegu point is located between the thumb and index finger, on the back of the hand which is Approved by national institute of health(2014) as a useful point to alleviate pain and anxiety(5)

Distraction is defined as a nonaversive approach which is used to modify a child's discomfort by disrupting his/her attention away from the main task to accomplish successful treatment with high quality. Audiovisual distraction takes control in an enjoyable way over two types of sensations, hearing and visual, and at the same time it succeeds in partially isolating the patient from the sounds and sight of the unfriendly clinical environment.

Tell show do method is one of the most taught behaviour management techniques. It dictates that before any procedure is done, the child is to be well informed and a demonstration should be given using a simulator exactly what will happen before the procedure is started.

So, The aim of the study was to evaluate and compare the efficacy of acupressure therapy, audiovisual aids and conventional tell show do technique in reducing the anxiety in children during the administration of local anaesthesia.

MATERIALS AND METHODS

A randomized cross-sectional clinical trial was conducted at Department of Pediatric and Preventive Dentistry, Darshan Dental College, Udaipur on 86 healthy children, selected randomly between the age ranging from 7 to 11 years requiring administration of anaesthesia for dental treatment.

Inclusion Criteria-

- Apparently healthy, well-nourished children of age-group between 7 and 11 years.
- Patients with prior parental consent.
- Patients who require treatments such as minor surgical procedures that require administration of local anaesthesia.

Exclusion Criteria-

- Patients with previous history of LA administration
- Prior history of allergic reactions to local anaesthetics.
- Special children

Subjects will be divided into four groups with 26 children in each group. The following techniques will be used for the reduction of anxiety during the administration of local anaesthesia –

- Group 1-Acupressure therapy that is bilateral pressure on He Gu (L14) point which is the highest point located on the dorsal surface above the abductor pollicis muscle during abduction of thumb and index finger,
- Group 2-Audio Visual Aids,
- Group 3-Conventional Tell Show Do Technique
- Group 4- (Control group) No techniques will be used for the reduction in anxiety.

Group 1 acupressure application at acupoint L14 (He Gu) bilaterally was done which is the highest point located on the dorsal surface above the abductor pollicis muscle during the abduction of the thumb and index finger with thumb. A sustained amount of pressure was applied for 2–3 minutes. The local anaesthetic injection was given after application of pressure and the application of pressure was continued even while LA was administered.

Group II children were asked for their favourite programs like cartoons or television shows or movies, which were played to distract them.

Group 3 children were explained about the procedure beforehand according to tell show do technique.

Group IV was the control group where none of the distraction techniques were employed.

The anxiety levels in children of all the groups was recorded at three different intervals i.e. **Before, During and After administration of local anesthetic** by a Pulse Oximeter and Raghvendra M Shetty pictorial scale (RMS-PS 2015).

Statistical Analysis

The data was analysed by SPSS (21.0 version). Shapiro Wilk test was used to check which all variables were following normal distribution. For comparison of continuous quantitative data among more than two groups, one way anova followed by Tukeys test were used. For intraroup comparison Paired t test was used. Association between categorical variables were assessed using Chi square test. Level of statistical significance was set at p-value less than 0.05 (*).

RESULTS-

1. INTERGROUP COMPARISON OF PULSE RATE:

The Control and Audio Visual Aids groups exhibit higher pulse rates during and after the treatment compared to the other groups.

Comparison Of Response Before Treatment

RESPONSE BEFORE			HAPPY	INDIFFERENT	SAD	VERY HAPPY	Total
GROUPS	ACCUPRESSURE THERAPY	N	14	1	1	10	26
		%	53.8%	3.8%	3.8%	38.5%	100.0%
	AUDIO VISUAL AIDS	N	12	5	2	7	26
		%	46.2%	19.2%	7.7%	26.9%	100.0%
	CONVENTIONAL TELL SHOW DO TECHNIQUE	N	11	6	0	9	26
		%	42.3%	23.1%	0.0%	34.6%	100.0%
	CONTROL GROUP	N	9	6	0	11	26
		%	34.6%	23.1%	0.0%	42.3%	100.0%
Total		N	46	18	3	37	104
		%	44.2%	17.3%	2.9%	35.6%	100.0%
P VALUE							0.391

Comparison Of Response During Treatment

	DURING		HAPPY	INDIFFERENT	SAD	VERY HAPPY	VERY SAD	Total
GROUPS	ACCUPRESSURE THERAPY	N	18	4	2	2	0	26
		%	69.2%	15.4%	7.7%	7.7%	0.0%	100.0%
	AUDIO VISUAL AIDS	N	2	6	9	0	9	26
		%	7.7%	23.1%	34.6%	0.0%	34.6%	100.0%
	CONVENTIONAL TELL SHOW DO TECHNIQUE	N	2	0	8	0	16	26
		%	7.7%	0.0%	30.8%	0.0%	61.5%	100.0%
	CONTROL GROUP	N	2	0	2	0	22	26
		%	7.7%	0.0%	7.7%	0.0%	84.6%	100.0%
Total		N		10	21	2	47	104
		%		9.6%	20.2%	1.9%	45.2%	100.0%
P VALUE								0.001

Comparison Of Response After Treatment

AFTER THE TREATMENT			HAPPY	INDIFFERENT	SAD	VERY HAPPY	VERY SAD	Total
GROUPS	ACCUPRESSURE THERAPY	N	18	4	2	2	0	26
		%	69.2%	15.4%	7.7%	7.7%	0.0%	100.0%
	AUDIO VISUAL AIDS	N	2	6	13	0	5	26
		%	7.7%	23.1%	50.0%	0.0%	19.2%	100.0%
	CONVENTIONAL TELL SHOW DO TECHNIQUE	N	2	1	19	0	4	26
		%	7.7%	3.8%	73.1%	0.0%	15.4%	100.0%
	CONTROL GROUP	N	3	1	4	0	18	26
		%	11.5%	3.8%	15.4%	0.0%	69.2%	100.0%
Total		N	25	12	38	2	27	104
		%	24.0%	11.5%	36.5%	1.9%	26.0%	100.0%
P VALUE								0.001

DISCUSSION-

Dental anxiety can be defined as a feeling of apprehension about the dental treatment that is not necessarily connected to a specific external stimulus.[4]Dental anxiety was found to be around 82.6% in a study done by Appukuttan et al(2019)

There are multiple reasons for the development of anxiety, such as a learned reaction to a previous traumatic or unpleasant dental experience or can result from negative dental state beliefs and expectations that make patients especially vulnerable to the reception and contact, they receive from dental staff and to the outcome of dental treatment.[5]

As enormous scientific evidence proves that substandard oral health is associated with an increased level of dental anxiety, interventions at an early stage in children with increased levels of dental anxiety take priority.

Results have shown that all the distraction techniques used in the present study showed a statistically significant reduction in the anxiety levels at different time intervals. However, maximum reduction in anxiety levels was seen in acupressure group, which was consistent with the study by Maria Eliza Consolação Soares et al wherein the children who received acupressure on documented points for the reduction of anxiety had a significantly lower heart rate after the restorative procedure.[6]

Sisodia et al found that three-point acupressure therapy with acupressure beads could significantly reduce dental anxiety during local anesthetic injection, which confirms our results. Another study by Avisa et al. in which effectiveness of two anxiolytic points was found effective in significantly reducing the dental anxiety during scaling and restorative procedures.[7]

While in contrast to the present study, Study conducted by Errappa et al in 2021[1] where in 200 children between 6 and 10 years of age were subjected to four techniques for anxiety reduction and the audiovisual group had shown a greater reduction of pulse rate and respiratory rate between preoperative to the administration of LA, than acupressure which could be due to sight of the needle in the acupressure group.

Acupressure showed to be an effective distraction technique as stimulation of L14 acupoint modulates the perception of pain by influencng the functional connectivity in the pain matrix between the regions of the brain. The myelinated nerve fibers in muscles are stimulated with the application of pressure at acupoints which in turn will activate the midbrain and pituitary hypothalamus via the spinal cord.

Various neurotransmitters like Enkephalin, b-endorphin, Dynorphin, Serotonin, and Noradrenalin, play an important role by stimulating A fibers situated in the skin and muscles. The A fibers which terminate in the second layer of the black horn release the enkephalins which inhibit the incoming painful sensations. Acupressure has also been shown to stimulate the endogenous opioid system, and thus, affects intermediate behaviors and facilitates psychological improvement. The continuous application of pressure on both hands itself was a way of distraction to the child. In addition, the pressure applied at L14 point reduced any pain in the oro-facial region leading to reduced anxiety.

All the three distraction techniques diverted the children from the unpleasant dental environment either by distraction or by relaxation. Hence, it can be stated that conventional tell show do technique, acupressure, and A-V aids are effective in reducing anxiety in children during the administration of LA.

Due to limited studies in this area and in the pediatric population, it is recommended to perform further research to demonstrate the acupressure efficacy on preoperative anxiety during dental treatment.

CONCLUSION-

All the three distraction techniques are cost-effective, non-invasive, and non-pharmacological without any side effects.

Acupressure therapy was established as the most effective method in reducing anxiety, followed by AV aids in children.

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